CLAIMS

1. A system (2) for producing an optical mask (35) for surface treatment, the system (2) comprising:

- a layer of material (20; 120; 220) which has an outer surface (21; 121; 221) that is exposed to the outside environment; and
- a generating and depositing device (40) for generating and depositing droplets (30) on the outer surface (21; 121; 221) of the layer of material (20; 120; 220), in a specific arrangement (31), forming the optical mask (35) on the outer surface (21; 121; 221) of the layer of material (20; 120; 220),

wherein the outer surface (21; 121; 221) of the layer of material (20; 120; 221) is initially treated to define preferential fixing sites of the droplets (30), thus enabling the arrangement (31) of the droplets (30) forming the optical mask (35) on the outer surface (21; 121; 221) to be controlled.

2. The system (2) according to claim 1, characterized in that the system (2) comprises a substrate (10) having a surface (11) covered by the layer of material (20).

3. The system (2) according to claim 1, characterized in that the layer of material (20) is permeable to the luminous flux, and in that the system (2) comprises a substrate (10) having a surface (11) arranged opposite the layer of material (20).

4. A surface treatment plant (1), comprising:

- a system (2) for producing an optical mask (35) according to claim 1; and
- a localized treatment device (50; 250) for localized treatment of the layer of material (20; 120; 220), depending on the arrangement (31) of the droplets (30) forming the optical mask (35) on the outer surface (21; 121; 221), through the optical mask (35) formed on the layer of material (20; 120; 220).

5. The plant (1) according to claim 4, characterized in that the localized treatment device (50) for the layer of material (20; 120) constitutes a localized removal device for the localized removal of the layer of material (20; 120), depending on the arrangement (31) of the droplets (30) forming the optical mask (35) on the outer surface (21; 121) of the layer of material (20; 120), which thus comprises removal areas (23; 123) and material areas (24; 124).

6. The plant (1) according to claim 4, characterized in that the layer of material (20; 120; 120) is made from a photosensitive material, and in that the localized treatment device (50; 250) of the layer of material (20; 120; 220) comprises, firstly, an exposure unit (51; 251) emitting a luminous flux (53; 253) which passes through the droplets (30) and reaches the outer surface (21; 121; 221) of the layer of material (20; 120; 220) and, secondly, a developing unit (54; 254) of the layer of material (20; 120; 220) after exposure to the luminous flux (53; 253).

7. A surface treatment plant (1), comprising:

- a system (2) for producing an optical mask (35) according to claim 2;
- a localized treatment device (50) for localized treatment of the layer of material (20), depending on the arrangement (31) of the droplets (30) forming the optical mask (35) on the outer surface (21), through the optical mask (35) formed on the layer of material (20), which thus has removal areas (23) and material areas (24) forming a second mask (25) on the substrate (10); and
- a localized treatment device (60) for localized treatment of the surface (11) of the substrate (10) through the second mask (25) formed by the layer of material (20) on the substrate (10).

8. The plant (1) according to claim 6, characterized in that the localized treatment device (60) for the surface (11) of the substrate (10) is a microtexturing device.

9. The plant (1) according to claim 7, characterized in that the layer of material (20; 120; 120) is made from a photosensitive material, and in that the localized treatment device (50; 250) of the layer of material (20; 120; 220) comprises, firstly, an exposure unit (51; 251) emitting a luminous flux (53; 253) which passes through the droplets (30) and reaches the outer surface (21; 121; 221) of the layer of material (20; 120; 220) and, secondly, a developing unit (54; 254) of the layer of material (20; 120; 220) after exposure to the luminous flux (53; 253).

10. A surface treatment plant (1), comprising:

- a system (2) for producing an optical mask (35) according to claim 3;
- a localized treatment device (50; 250) for localized treatment of the substrate (10), depending on the arrangement (31) of the droplets (30) forming the optical mask (35) on the outer surface (21; 121; 221) of the layer of material (20; 120; 220), through the optical mask (35) formed on the layer of material (20; 120; 220) permeable to the luminous flux.

11. The plant (1) according to claim 10, characterized in that the substrate (10) is made from a photosensitive material, and in that the localized treatment device (50; 250) for the substrate (10) comprises, firstly, an exposure unit (51; 251) emitting a luminous flux (53; 253) which passes through the droplets (30) and reaches the surface (11) of the substrate (10) and, secondly, a developing unit (54; 254) of the substrate (10) after exposure to the luminous flux (53; 253).

12. A method for producing an optical mask (35) for surface treatment, characterized in that this method comprises the following steps:

- a step of providing a layer of material (20; 120; 220) having an outer surface (21; 121; 221) that is exposed to the outside environment;
- a step of pretreating the layer of material (20; 120; 221), the pretreatment defining preferential fixing sites (63) of the droplets (30) to the outer surface (21; 121; 221) of the layer of material (20; 120; 221), thus

enabling the arrangement (31) of the droplets (30) forming the optical mask (35) on the outer surface (21; 121; 221) to be controlled;

- a step of generating and depositing droplets (30) on the outer surface (21; 121; 221) of the layer of material (20; 120; 220), in a specific arrangement (31), thus forming the optical mask (35) on the outer surface (21; 121; 221) of the layer of material (20; 120; 220).

13. A surface treatment method, characterized in that the method comprises the following successive steps:

a) a step of providing a layer of material (20; 120; 220) having an outer surface (21; 121; 221) that is exposed to the outside environment;

b) a step of pretreating the layer of material (20; 120; 221), the pretreatment defining preferential fixing sites (63) of the droplets (30) to the outer surface (21; 121; 221) of the layer of material (20; 120; 221), thus enabling the arrangement (31) of the droplets (30) forming the optical mask (35) on the outer surface (21; 121; 221) to be controlled

c) a step of generating and depositing droplets (30) on the outer surface (21; 121; 221) of the layer of material (20; 120; 220), in a specific arrangement (31), thus forming the optical mask (35) on the outer surface (21; 121; 221) of the layer of material (20; 120; 220); and

d) a step of localized treatment of the layer of material (20; 120; 220) depending on the arrangement (31) of the droplets (30) on the outer surface (21; 121; 221), through the optical mask (35) formed on the layer of material (20; 120; 220).

14. A surface treatment method, characterized in that the method comprises the following successive steps:

a) a step of providing a substrate (10) having a surface (11) covered by a layer of material (20), having an outer surface (21) that is exposed to the outside environment;

b) a step of pretreating the layer of material (20; 120; 221), the pretreatment defining preferential fixing sites (63) of the droplets (30) to the outer surface (21; 121; 221) of the layer of material (20; 120; 221), thus enabling the arrangement (31) of the droplets (30) forming the optical mask (35) on the outer surface (21; 121; 221) to be controlled;

c) a step of generating and depositing droplets (30) on the outer surface (21) of the layer of material (20), in a specific arrangement (31), thus forming an optical mask (35) on the outer surface (21) of the layer of material (20);

d) a step of localized removal of the layer of material (20) depending on the arrangement (31) of the droplets (30) on the outer surface (21), through the optical mask (35) formed on the layer of material (20), which thus has removal areas (23) and material areas (24) forming a second mask (25) on the substrate (10); and

e) a step of localized treatment of the surface (11) of the substrate (10) through the second mask (25) formed by the layer of material (20) on the substrate (10).

15. A surface treatment method, characterized in that the method comprises the following successive steps:

a) a step of providing a layer of material (20; 120; 220) permeable to luminous radiation and having an outer surface (21; 121; 221) that is exposed to the outside environment;

b) a step of pretreating the layer of material (20; 120; 221), the pretreatment defining preferential fixing sites (63) of the droplets (30) to the outer surface (21; 121; 221) of the layer of material (20; 120; 221), thus enabling the arrangement (31) of the droplets (30) forming the optical mask (35) on the outer surface (21; 121; 221) to be controlled;

c) a step of providing a substrate (10) having a surface (11) arranged opposite to the layer of material (20);

d) a step of generating and depositing droplets (30) on the outer surface (21) of the layer of material (20), in a specific arrangement (31), thus forming an optical mask (35) on the outer surface (21) of the layer of material (20);
e) a step of localized treatment of the surface (11) of the substrate (10) through the optical mask (35) formed by the droplets (30) on the layer of material (20).

16. The surface treatment method according to claim 15, characterized in that during the treatment step e), a relative displacement may be carried out between the surface (11) of the substrate (10) and the layer of material (20; 120; 220) supporting the droplets (30) forming the optical mask (35), so as to regularly reproduce on the surface (11) of the substrate (10) a pattern defined by the optical mask (35).

17. The surface treatment method according to one of claims 13 to 16, characterized in that the step of generating and depositing droplets (30) is repeated several times to modify the arrangement (31) of the droplets (30) forming the optical mask (35), before carrying out the next step.